DOCUMENT RESUME

ED 044 050 EM 008 548

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TITLE Stanford's Interest in Cable Television. (With Appended Submission to the Federal Communications Commission by the Stanford Cable Television Committee).
INSTITUTION Stanford Univ., Calif. Inst. for Communication Research.
PUB DATE 4 Nov 70
NOTE 14p.

EDRS PRICE EDRS Price MF-$0.25 HC-$0.80
DESCRIPTORS Adult Education, *Cable Television, College Cooperation, Community Cooperation, Community Education, Computer Assisted Instruction, Continuing Education Centers, Continuous Learning, Costs, Dial Access Information Systems, *Educational Television, Higher Education, Language Laboratories, Libraries, Multichannel Prcgraming, Programing, Televised Instruction, *Universities, University Extension, University Libraries, Video Tape Recordings
IDENTIFIERS FCC, Federal Communications Commission, Living Library, *Stanford University

ABSTRACT

Stanford University, in planning for cable television, should be aware of the future possibilities and the costs. It should join the City of Palo Alto in obtaining a cable system, assuming that Palo Alto selects a modern two-way (subscriber response capability) system. Interconnection with other mid-Peninsula cable televisicn systems is desirable, not only for reasons of economy, but also for the opportunity of reaching larger audiences with Stanford originated material. At least 10 percent of the channels of the cable system should be reserved for educational and instructional program origination by local educational institutions, including Stanford. A minimum of 24 channels should be provided, with provision for increasing the number of channels, if needed. Innovative opportunities include low-cost videotaping of seminars, extended language laboratory capability, dial-access information systems, access to educational video cassettes, and computer-aided instruction. Experimental instructional service could be offered on an open enrollment basis to the surrounding community, expanding the potential for lifelong learning. The suggestion is made that the Federal Communications Commission allow some funds to be paid to local institutions for educational programing. (MF)

ED044050

U.S. DEPARTMENT OF HEALTH, EDUCATION & WELFARE
OFFICE OF EDUCATION

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Stanford's Interest in Cable Television

A Report to President Richard W. Lyman

EM008548

The Presidential Ad Hoc Committee
on
Cable Television
Professor Edwin B. Parker, Chairman
November 4, 1970

Cable Television Committee Report

Introduction

Cable television is regarded by many observers as the most important development in the field of communications since the inception of television itself. Its novel features are: (1) its capability to provide as many TV channels as users are willing to pay for; and (2) its capability to distribute programs selectively to much smaller groupings of persons than conventional over-the-air TV, such as all the subscribers in a single neighborhood or all the subscribers in a region willing to pay a prescribed price for a given program. The first capability provides the technical capability needed to overcome the scarcity of over-the-air TV channels and makes it possible (although not inevitable) for increased programming diversity to be provided. The second capability further increases the likelihood of program diversity, because a program with only local appeal can compete with a program with national appeal within its local area. An example is a high school football game. The second capability also provides a mechanism for pay TV which can be applied to entire channels (such as a medical channel) or to single programs (such as a college football game). Pay TV allows viewers to express their preferences for certain types of programs that have too limited a market to be the subject of advertiser-financed TV.

These capabilities of cable TV, without more, are very likely to cause a startling change in the character of the programs that we will be able to view in our homes during the next decade. However, as we look ahead a few years there are many other prospects for new services that are likely to be realized through this medium.

One class of new services requires that a subscriber response capability be built into the system, so that an individual

subscriber can send a message to the central office or "head-end" of the local cable system as well as receive signals that originate there. Such systems are "two-way" rather than "one-way", but they are not two-way in the same sense that the telephone network is a two-way system. In the telephone network any subscriber can be connected with any other subscriber by a direct person-to-person connection that is not shared with other subscribers during the time that the parties are connected. This type of two-way capability will also be provided by the Picturephone system which will be provided by the Bell System during the coming decade. The subscriber response capability that will soon become available in cable TV systems is quite different from these person-to-person two-way systems. First, it will be used to provide only a very narrow bandwidth channel for the subscriber's response, rather than a full TV channel. Second, it will only allow the subscriber to communicate with the cable head-end and will not allow the subscriber to communicate with other subscribers on an individual basis. Its potential uses are many. It can be used to provide an immediate response from all the viewers to a question asked on a TV program. Such a service would be impossible using the telephone network, because of the congestion introduced by, say, 30,000 viewers all picking up their telephones at the same time. It can also be used for ordering other services, such as the use of a particular channel on either a shared or individual basis. It will be possible to connect any viewer with a computer at the head-end or at some other location, and the use of a channel for this purpose could be ordered through the subscriber response system. Similarly, the use of this system for ordering goods advertised on a program (probably subject to confirmation in writing), or to indicate a viewer's preference or the viewer's answer to a multiple-choice question in an educational program, would be possible.

In planning for Stanford's future cable TV system, it is important to be aware of these future possibilities and their costs. The Hammett and Edison report to the City of Palo Alto has properly considered many of these possibilities and has suggested a system design that offers a great deal of flexibility for future development of these services. It suggests a three cable system, two cables to carry signals to the customer and one for subscriber response signals. Such a system

is somewhat more expensive than the type of two-way system being installed in Sunnyvale and elsewhere by commercial cable companies, but it offers lower long-run costs and greater flexibility for the future than the commercial systems. Whether or not this is the optimum first-step system is not obvious and would require further analysis. However, it is the opinion of our committee that a two-way subscriber response capability should be provided in the initial system design, so that either the Hammett and Edison design or something similar to it (such as the Sunnyvale design) should be installed. A very important feature of either of these designs is the fact that the use of two cables to the home provides 24 channels to the viewer using his present set without the necessity for a "set-top converter." Twelve channels are available from one cable and twelve from the other and a simple switch allows the subscriber to connect either cable to his set. In addition, in the Hammett and Edison design 15 additional channels are available on each cable for special purpose use by subscribers with set-top converters. These channels would be usable for pay TV or other private uses and access to individual channels could be controlled from the head-end. The cost of providing these channels could be covered by special charges in addition to the monthly charges that would be paid by all subscribers, just as long-distance telephone service is covered by charges made in addition to the monthly charge for local service. Typical monthly charges for one-way cable TV service are around five dollars per month in commercial systems, and it might be expected that a municipally owned system would need to make similar charges for the basic service. In the long-run, it seems likely that the average subscriber to a two-way service would pay a bill of at least twice this amount as a result of his use of additional services.

Stanford faculty homes are likely to use services at about the same average level as Palo Alto homes. In addition to this faculty home service, it appears to the committee that there are likely to be a number of special needs of the Stanford community that are not likely to be the same as those of the Palo Alto or Stanford faculty home areas. Students may wish to have TV available in their rooms on an individual basis, if the possibility of high quality individualized programming is actually realized in this system. A

future of individualized computer-aided instruction and of individual use of computers from at least some homes or dormitory rooms seems extremely likely, if the service is made available. A minimum campus system should include a cable connection and a set in each living unit and the possibility of obtaining service in any room on campus by payment of the usual rental fee. Fortunately, it is not necessary to decide in advance the extent of the ultimate campus system, as the cost penalty for providing the system in increments as the demand develops is not great and this is the usual way of providing this type of service.

Because Stanford's needs can probably be adequately met by a system such as that suggested by Hammet and Edison for the City of Palo Alto, it seems highly desirable to join with Palo Alto in obtaining a cable system, assuming that Palo Alto does select a modern two-way cable system. Three very important advantages would be connected with this policy. First, economies of scale would be realized in a joint system, especially if Mountain View and other communities join in. Second, a municipal system seems likely to have both cost and service advantages over a commercial system, if it is well managed and if the city does not use the cable system as a means of obtaining general revenues. Third, it offers an opportunity for Stanford to communicate with its neighbors in a variety of new ways that may prove beneficial. The exact form of programming services that Stanford might best provide to the community is difficult to predict. Certain guest lectures and general interest activities at the campus would unquestionably be of interest to wider audiences than can now attend these events. The possibility of providing certain instructional services such as computer-aided instruction exists today and might prove of considerable interest to the general public. We have not attempted to predict the future of this type of activity, but have suggested an exploratory attitude with a view to allowing experiments to take place.

Recommendations

Access and Interconnection

1. People living in homes, apartments and dormitories on the Stanford campus should have the opportunity to individually subscribe to cable TV services.

2. Because of the high capital costs, uncertain short term market, and the opportunity for economies of scale in larger systems, Stanford should give higher priority to exploring the possibilities of cooperating with nearby municipalities than to developing plans for an internal Stanford cable television system.

3. Since the City of Palo Alto is exploring the possibility of a municipal utility cable system, possibly in conjunction with the City of Mountain View, Stanford should work closely with Palo Alto in an attempt to have the Palo Alto cable TV system meet the specifications desired by Stanford.

4. A letter should be sent by President Lyman to the Santa Clara County Board of Supervisors, which has jurisdiction, informing them that Stanford is exploring the possibility of interconnection with a Palo Alto municipal cable system and requesting that no cable TV franchise for the Stanford campus be awarded without consultation with Stanford.

5. Stanford should encourage interconnection of mid-Peninsula cable television systems so that it will be technically possible for Stanford originated material to reach larger audiences and for material originated elsewhere to reach Stanford. In particular, an agreement to interconnect Palo Alto, East Palo Alto and Menlo Park cable systems should be a minimum condition before considering any application for use of Stanford land for an antenna site.*

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* It should be noted that the executive committee of the Campus Homeowners Association suggested, in the interest of maintaining the natural beauty of Stanford hills, that perhaps no antenna site on Stanford land be approved.

6. Stanford should attempt to obtain non-discriminatory common carrier access for program origination by all individuals and groups to any cable system servicing Stanford. The Federal Communication Commission has to date asserted no regulatory authority over cable television common carrier channels, but has encouraged experimentation with such channels. In our view, multiple channel common carrier access has higher priority than reservation of channels as a means of guaranteeing university and community access to cable channels for program origination. Our concept of common carriers is that charges could be sufficient to cover the long term marginal costs of adding additional channel capacity, so that more channels could be added to meet whatever demand arises.

7. At least 10% of the channels of the cable system should be reserved for educational and instructional program origination by mid-Peninsula educational institutions, including Stanford.

8. University facilities suitable for production of programs for cable transmission should be made available to any non-profit community group at cost when such use does not conflict with Stanford's use of those facilities and does not conflict with Stanford's tax exempt status.

9. Stanford should consider entering sufficient subscriptions to the cable television service itself to ensure that each residence hall or living unit (including Escondido Village lounges) and department has access to the system. Such an arrangement may provide a cheaper intra-university audio-visual communication system for educational and administrative use than could be obtained in any other way.

Technical requirements

10. To ensure an adequate technical basis for the variety of programming and community access that is likely to prove desirable, a minimum of 24 channels should be provided, with provision for later increasing the number of channels if needed.

11. The system should provide the technical capability for use of time-shared computer services via the cable system. This will require at least narrow band return communication (possibly on a

time-shared basis) from home terminals and time-shared broadband communication from a computer connected to the head-end of the cable system.*

12. Technical provision should be made for campus origination of cable television programs in any mid-Peninsula system that includes Stanford.

13. Technical standards for cable transmission should permit transmission of program material recorded on half-inch videotape equipment and use of other low cost equipment.

14. Neighborhood trunk cable channels should be arranged to permit different neighborhoods to get different programs on the same channel at the same time, while at other times programs of broader interest may be transmitted to an entire community. For example, it should be possible to have local Stanford use of one or more channels while residents of different neighborhoods in Palo Alto receive different programs on those channels.

15. In addition to the public channels, the cable system should permit those subscribers willing to pay additional charges, the opportunity to receive "narrowcast" programs aimed at special non-geographically contiguous audiences. Specialized programs for physicians and pay-TV audiences are two different examples of how such capability might be used.

16. Return communication channels should provide the technical possibility of both audience measurement and audience response.

Program Origination

17. To the extent possible without creating significant claims against university general funds, Stanford should make every effort to originate program material for cable television transmission.**

* The Stanford Computation Center has expressed interest in the development of plans for use of cable television channels for communication from remote terminals to computers, and for computer to computer communication on campus.

**The Athletic Department, the Committee on Public Exercises, the Communication Department, the Computer-aided Instruction Laboratory of the Institute for Mathematical Studies in the Social Sciences, the Music Department, the Philosophy Department, the School of Engineering Instructional Television Program, the Speech and Drama Department, the Technical Information Service of the Stanford Libraries, and other campus groups may wish to participate in the presentation of instructional or public affairs services intended either for on-campus or off-campus use via cable television channels.

18. Since a Palo Alto market survey indicated that a significant amount of local programming (including educational and instructional programming) would be required to attract cable television subscribers, and since the Federal Communication Commission has suggested, in a recent notice of proposed rulemaking, that 5% of gross revenues from cable systems be diverted to educational programming, Stanford should negotiate with Palo Alto concerning potential financial support from CATV revenues for Stanford originated educational programming.

19. Stanford should take whatever legal action, if any, is required to facilitate the sale to the public via cable television of educational services, including library services, computer-aided instruction and other computer services, that do not conflict with Stanford's tax exempt status.

20. Stanford faculty and students, in conjunction with library and computation center staff, should be encouraged to develop plans for innovative opportunities utilizing the potential of two-way cable television for individualized instruction. Some of the possibilities include low-cost videotaping of seminars, extended language laboratory capability, dial-access information systems for instructional materials, improved access to educational video cassettes when they become more generally available, and computer-aided instruction. These concepts have been referred to as a "living library."*

21. Stanford faculty, in conjunction with library and computation center staff, should be encouraged to develop plans and solicit research and curriculum development funds from outside the university for an experimental instructional service that could be offered on an open enrollment basis to the surrounding community via cable television channels. This concept has been referred to as an "education delivery system", which could expand the potential for lifelong learning.

Further Steps

22. Either the present committee or a successor should be given the task of providing Stanford's liaison with the City of Palo

* Dean of Undergraduate Studies James Gibbs, in discussion with the Committee Chairman, has endorsed the suggestion that innovative instructional programs be developed, at least on an experimental basis, in connection with cable television.

Alto, while Palo Alto is debating cable television plans that have potential impact on Stanford.

23. The potential implications of Stanford's involvement in the origination of instructional programs to be transmitted via television cables are considerable, both from the point of view of financing and curriculum. Therefore, implications of Stanford program origination for both on-campus and off-campus instruction should be given more extensive study either by the present committee or a successor.

24. Initial attempts were made to convene a meeting of people in other educational institutions and Peninsula municipal governments to exchange views on cable teleivison, but a satisfactory date could not be set prior to the November 1 reporting date. If the life of the present committee is extended or a successor appointed, such consultation should be arranged.

25. Several lines of inquiry initiated by the committee should be continued and reported back to the committee or its successor at a later date. A law student, Jeff Sydney, working under the direction of Professor John Barton in the law school, is preparing a legal note on certain implications of common carrier cable television. Stanford's legal staff have been asked to give additional advice concerning legal implications of some of the recommendations of the committee. Professor Henry Breitrose in the Communication Department has been asked to prepare a statement of what studio facilities and equipment would be desirable for Stanford program origination capability (and to provide cost estimates). A brief preliminary look at costs of different technical alternatives should be extended into a more complete economic analysis of a cable television system designed to serve Stanford's needs, including the cost of subscriber response capability.

26. Since the potential of cable television for the Stanford campus will be strongly influenced by the Federal Communications Commission, either the present committee or a successor should prepare a communication concerning Stanford's interest in cable television to be filed with the FCC before the December 7, 1970 deadline for submissions in the current cable television reulemaking proceeding.

Federal Communications Commission
Docket #18397A
(Cable Television Inquiry)
December 4, 1970

Comments of

Stanford Cable Television Committee
c/o Prof. Edwin B. Parker, Chairman
Institute for Communication Research
Stanford University
Stanford, California 94305

The purpose of this submission by a private university cable television committee is not to recommend what specific actions the FCC should take in connection with Cable Television regulations. Rather, the purpose is to describe our interest in the cable television regulations and the results we hope those regulations will accomplish insofar as they affect us. The position taken herein is the position of a Stanford Committee, and is not an official position of the University.

In late August of 1970, Stanford University President Richard Lyman appointed a presidential ad hoc committee on cable television and asked that it report back to him by early November with recommendations concerning Stanford's interest in cable television. The November report of that committee is attached. President Lyman has authorized the distribution of this report and requested that the committee continue its activities. The portion of that report of most general interest is likely to be the first 21 recommendations, concerning access and interconnection, technical requirements, and program origination.

The key point is that Stanford University would like to have guaranteed access to cable television channels for origination of instructional content. It is impossible to estimate in advance the need for such channels other than that the need is likely to grow. We did recommend that at least 10% of the channels available locally be reserved for educational origination by local educational institutions. But to protect the longer range interest, we also recommended that as many channels as feasible be made available on a common carrier basis. Our concept of common carriers is that there be nondiscriminatory access at standard rates for all individuals and groups wishing to originate programming. Prices charged could be sufficient to cover the costs of adding additional channel capacity, so that more channels could be added to meet whatever demand arises.

Without prejudging the more general question of whether all cable television systems should be required to operate some or all of their channels on a common carrier basis, we hope that those cable television systems wishing to operate on a common carrier basis will be at least permitted and preferably encouraged to do so. We think it particularly important for cable television systems operated as a monopoly municipal utility (as the city of Palo Alto is considering) to operate on a common carrier basis for at least some channels. We do not have positive recommendations concerning how to accomplish that goal, but we do see legal problems that should be resolved. Since the FCC has apparently not yet asserted jurisdiction over common carrier channels on cable television

systems, such channels are presumably subject only to state and local regulation. Many cable television systems may be unwilling to provide common carrier channels if the cable operators are subject to legal liability for what others transmit over their channels.

One possible way to resolve some of these problems might be for the FCC to assert jurisdiction over common carrier cable television channels in systems which also retransmit broadcast signals (as the FCC has asserted jurisdiction over local origination channels). Common carrier channels could then be explicitly made exempt from the requirements of equal time, the fairness doctrine, and other regulations concerning content of programming, provided that time was available at nondiscriminatory rates to all who wished to originate programming. Regulations might also be implemented such that the person or group leasing time on the channel is for all legal purposes considered the broadcaster, rather than the cable operator who merely makes time available on his channel.

If the FCC wished to promote positively common carrier origination without introducing mandatory requirements, then common carrier originations could be counted as fulfilling all or part of the present program origination requirements.

The second major point concerns the availability of funding for local education origination. The suggestion in the FCC's proposed 'public dividend' plan that 5% of gross revenues be paid to the Corporation for Public Broadcasting would serve

better Stanford's interests, and, we believe, the interests of most other colleges and universities in the nation, if it were broadened to permit some of the 5% to be paid to local institutions for the origination of educational programming. Such broadening would appear to be consistent with the traditional goals of localism and diversity in television content.

These two concerns, access to the cable for program origination and flow of funds for instructional program production and origination, are central to the Stanford committee's recommendation (recommendation 21) that Stanford develop an education delivery system which could expand the potential for lifelong learning.